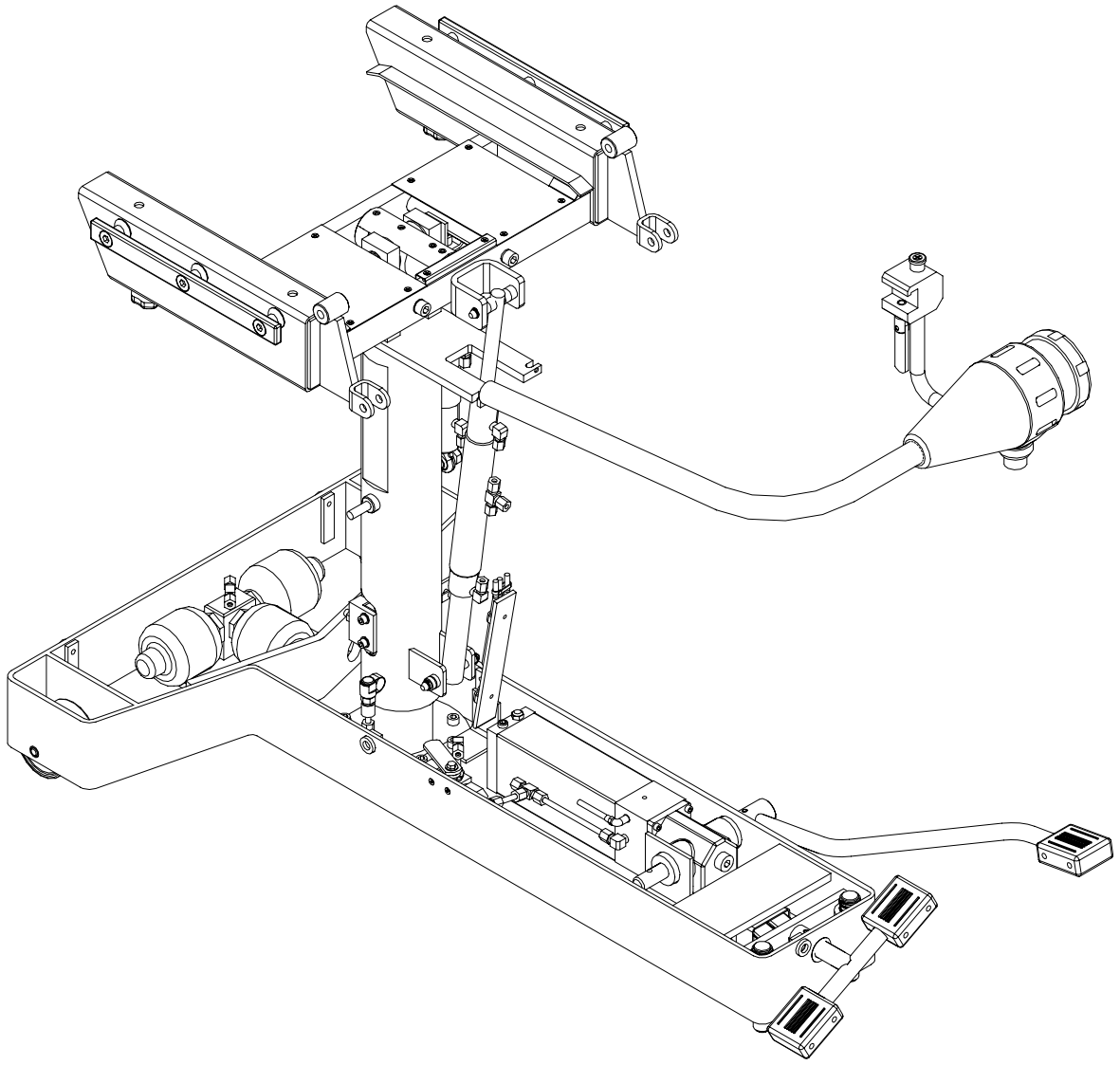
MAINTENANCE MANUAL

OPERATING TABLE OP 1700



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MERIVAARA

Merivaara Corp.
Puustellintie 2, FIN-15150 LAHTI, FINLAND
Tel. +358 3 3394 611 • Fax +358 3 3394 6144
merivaara@merivaara.fi

www.merivaara.com

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1. GENERAL

Dear operating table owner. The safe and fault-free use and maintenance of the equipment requires careful adherence to these instructions. When mounting accessories to the equipment, the instructions provided with them must be followed closely. Always keep the instructions for accessories together with this manual.

Warnings and observations in this instruction manual are indicated as follows:

WARNING! Please observe in order to ensure patient safety.

NOTE! Please observe in order to avoid causing damage to the equipment or its parts.

- Warnings and Notes are given on page 7, 15, 16 and 20.

The OP 1700 operating table complies with the IEC 601-2-46 and SFS-EN 60601-1 standards. The table complies with directive 93/42/EEC (MDD) product class I and bears a CE marking based on this classification.

Intended use

The Merivaara OP 1700 operating table is intended for general surgery applications as well as most specialised areas of surgery.

Your Specialist for integrated Medical Furniture and Equipment Systems.

Merivaara products form an integrated furnishing system for clinical, hospital and nursing home enviroments. The comprehensive range of Merivaara products includes high-quality tools and equipment needed in a variety of medical procedures.

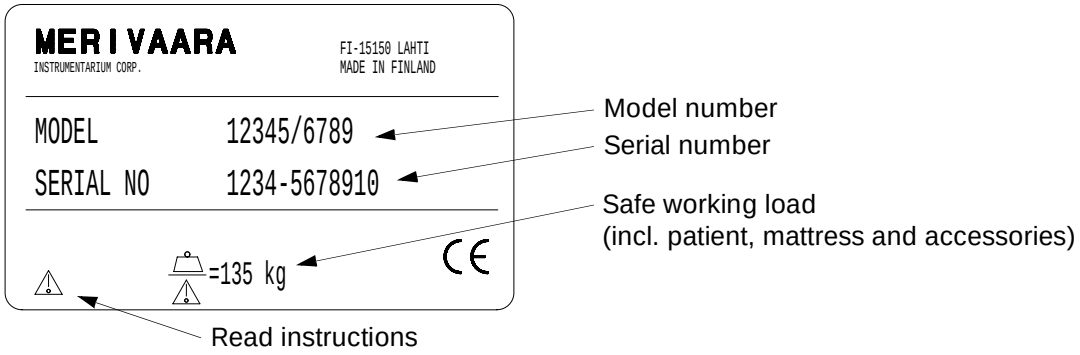
Merivaara products feature flexible design, turn easily into ideal working positions and offer high patient comfort. Daily nursing procedures are readily accommodated by the safe and easy operation of all Merivaara products. The comprehensive selection of (available) accessories make our products ideal for several speciality procedures.

You can get more information on Merivaara products, from our Sales Office. For matters related to equipment servicing, please contact the Merivaara After Sales Department.

2. TECHNICAL SPECIFICATIONS

2.1 Identification plate

The identification plate is located underneath the seat.



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2.2 Properties and materials

2.2.1 Conditions

Ambient temperature	+10 ... +40 °C
Ambient pressure	700 ... 1060 mbar
Relative humidity	30% ... 75 %
Transport temperature	- 10 ... +40 °C
Storage temperature	+10 ... +40 °C
Safe working load (incl. patient, mattress and accessories)	135 kg

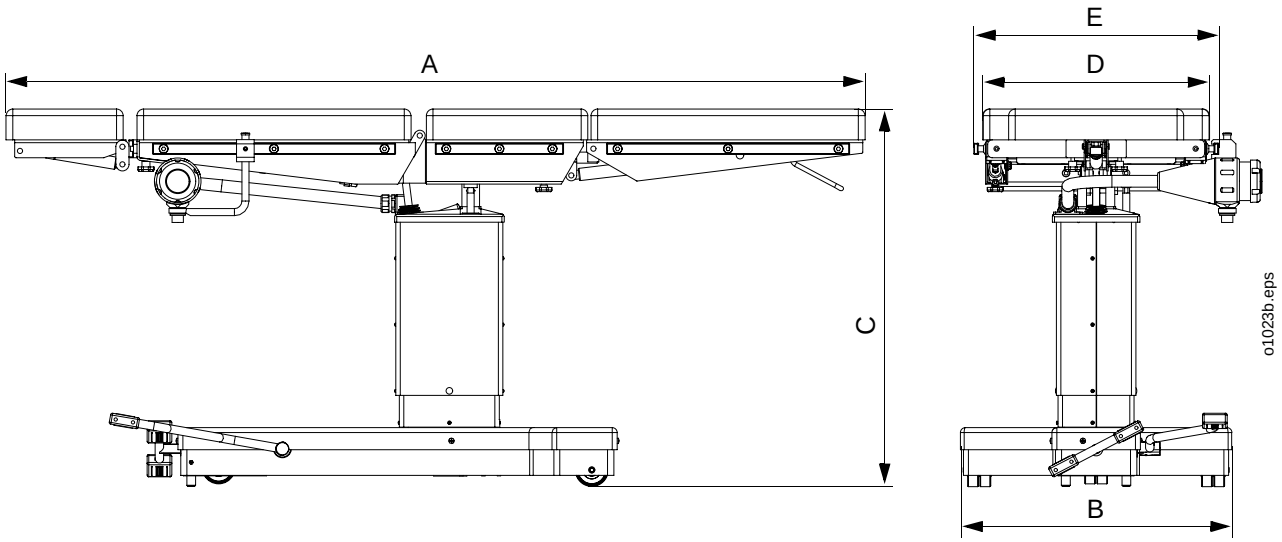
2.2.2 Adjustments

Side tilt	±15°
Back section	- 15° ... +70°
Leg section	- 90° ... +0°
Trendelenburg and anti-Trendelenburg	- 25° ... +25°
Headrest	- 40° ... +30°

2.2.3 Dimensions

	OP 1700
Operating table top	4 - piece
Operating table weight	145 kg
Length (A)	1950 mm
Width (B)	620 mm
Height (C)	730 - 1040 mm
Mattress width (D)	500 mm
Mattress base width (E)	555 mm
Castors	75 mm

Table 1. Dimensions



2.2.4 Surface materials

Surface materials	OP 1700
Epoxy-powder coat, frame parts	X
Stainless steel casing, columns, side rails	X
Chroming, handles, adjuster levers, pedal tubing	X
ABS (acrylonitrile/butadiene/styrene) protective casing	X
PU integral, mattresses	X
Rubber 61 bellows	X
Anodised aluminium, selector valve	X
LDPE (polyethylene), selector valve cover plug	X

Table 2. Surface materials used on operating table.

3. PRODUCT USE

3.1 Special instructions

In order to guarantee optimal surgical safety all users of the operating table must thoroughly acquaint themselves with the operating table operating instructions prior to using the table. Train the entire surgery staff in the correct use of the OP 1700 operating table and all warnings and notes related to it.

3.1.1 Warnings

When adjusting the table, ensure that the patient's fingers, hands or other parts of the body are not caught between the moving parts of the back or leg section or the seat.

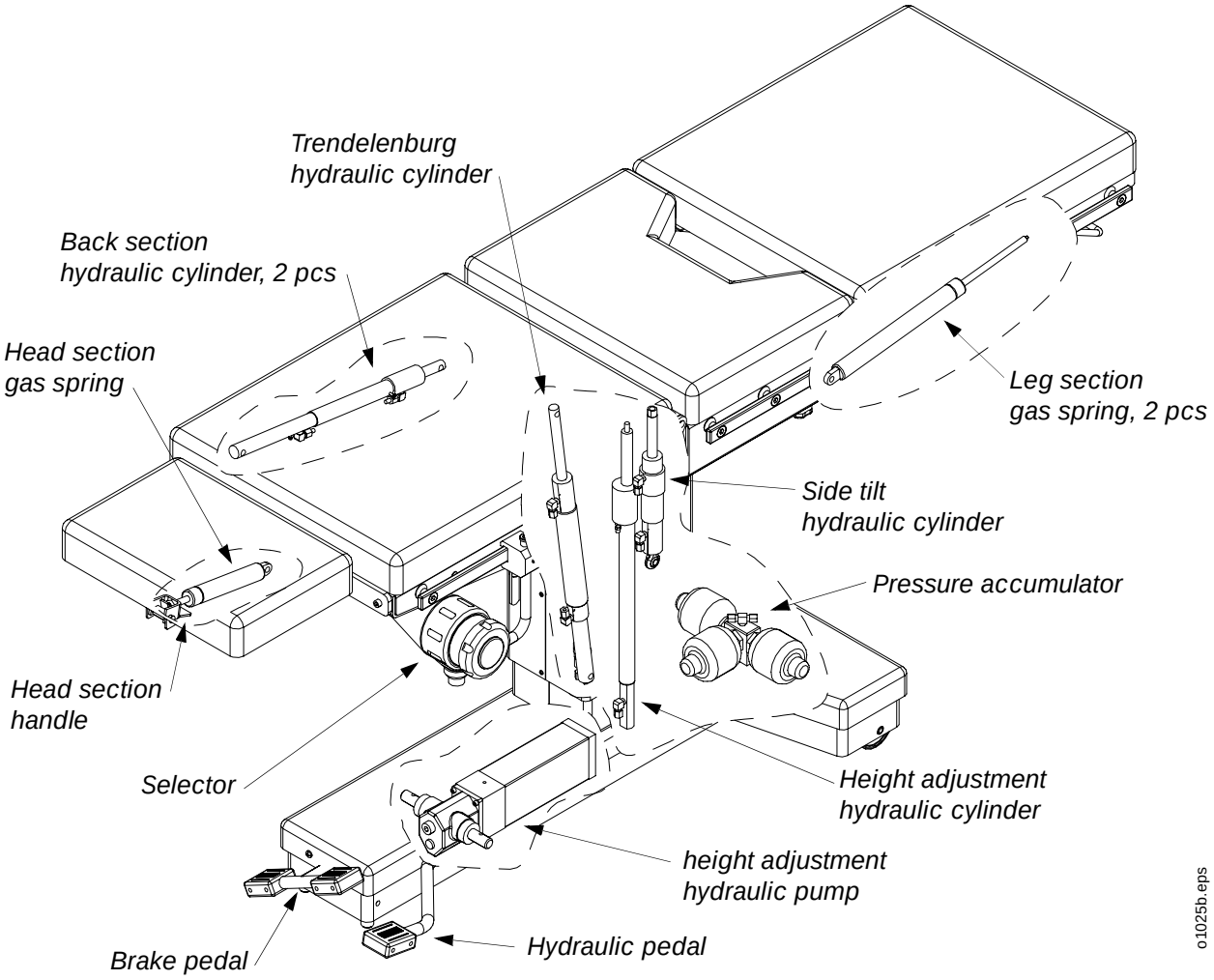
Adhere to the manufacturer's instructions when using diathermic or defibrillating equipment.

3.1.2 Important

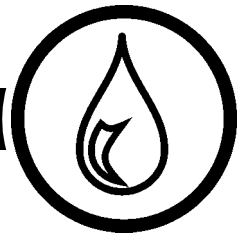
The anti-static properties of the operating table require the use of only Merivaara brand mattress sets and anti-static flooring.

Note ! Keep in mind that if the operating table surface is not raised high enough when the leg section is adjusted to its lowest position, it may strike the table base casing and cause damage to the table.

3.2 Main components



4. CLEANING



4.1 Daily cleaning and disinfecting

The OP 1700 operating table must be cleaned after completion of and prior to every surgery. Wipe down the mattresses and operating table top with a mild alkaline detergent (pH 7-8).

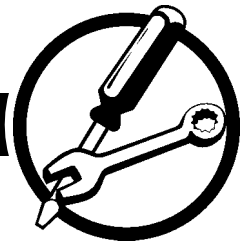
4.1.1 Disinfecting

Wipe using, for example, a 3% chloramine-based disinfectant (Klorilli) or similar cleaning agent.
Normal excretion stains are removed and disinfected with a 10% chloramine-based disinfectant.
Isolation patient excretion stains are cleaned and table surface is disinfected with a 25% chloramine-based disinfectant.

4.1.2 Drying

Dry thoroughly by wiping down immediately after cleaning or disinfecting.

5. MAINTENANCE AND REPAIR



5.1 Maintenance procedures

We recommend the following advance check-up and maintenance procedures to ensure continued maintenance and trouble-free operation of the OP 1700 operating table.

5.1.1 Daily maintenance

- During normal cleaning of the table, make a general visual inspection to ensure that it is in proper working order.
- The OP 1700 operating table must be cleaned after each surgical procedure (see section 4.1 on page 9).

5.1.2 Monthly maintenance

- Clean and lubricate all table joints lightly with machine oil.
- Check all table functions by fully extending and retracting them.

5.1.3 Annual maintenance

- Perform all the same inspections as in monthly maintenance.
- Check and adjust column clearance, if required.
- Check cylinders, hydraulic lines and their connections.
- Check pressure accumulator pressure.
- Check condition of castors and brakes.

5.2 Troubleshooting

In the event of a malfunction, determine the following:

- Does the malfunction occur in all movements or only one movement?
- Does the malfunction occur in both up and down movements or only in one direction?
- Does the table move into a certain position(s) by itself?

List of components whose breakage causes malfunction in all table hydraulic functions:

- Pump
- Pressure release valve

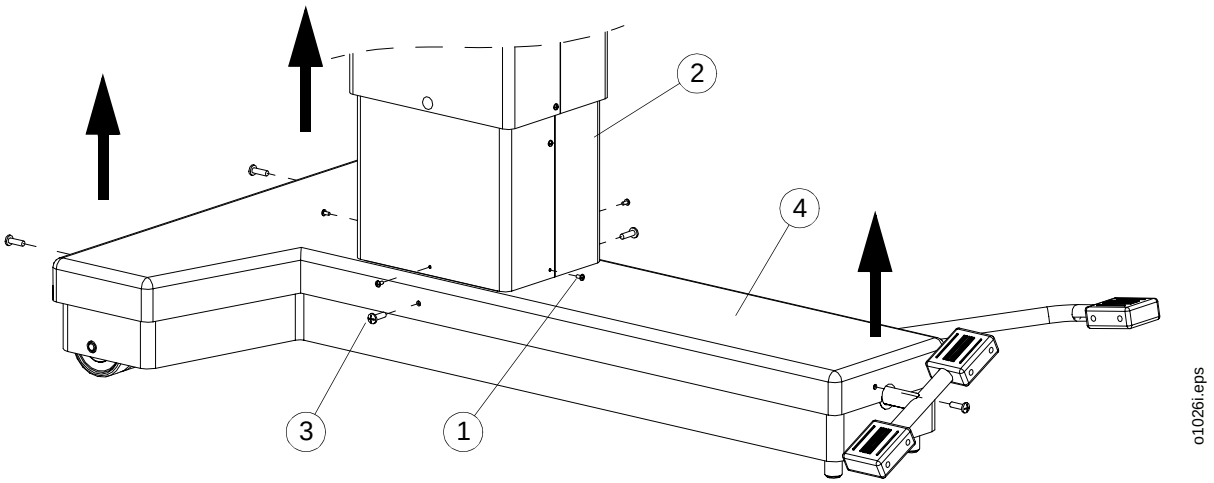
If the malfunction is restricted to only one function, the problem is probably:

- in the lines
- in the selector valve
- in the cylinder

Problem	Cause
Table top will not remain at the adjusted height	• Leak in hydraulic cylinders, lines or connectors • Faulty valve • Dirt in hydraulic system
Operating table top will not rise	• Oil level low • Air in the hydraulic system • Faulty pump • Pressure release valve dirty or faulty
Mattress base will not lower properly	• Faulty pump • Air in the hydraulic system • Pressure in pressure accumulator too low
Operating table pulls to one side when being pushed	• Worn or dirty castor
Headrest or leg section angle adjustment does not stay in place or does not work at all.	• The gas spring is damaged • Gas spring is installed incorrectly • Release cable is loose or tight
Table top flexing.	• Air in the hydraulic system • Oil level too low

5.3 Removal of protective casings

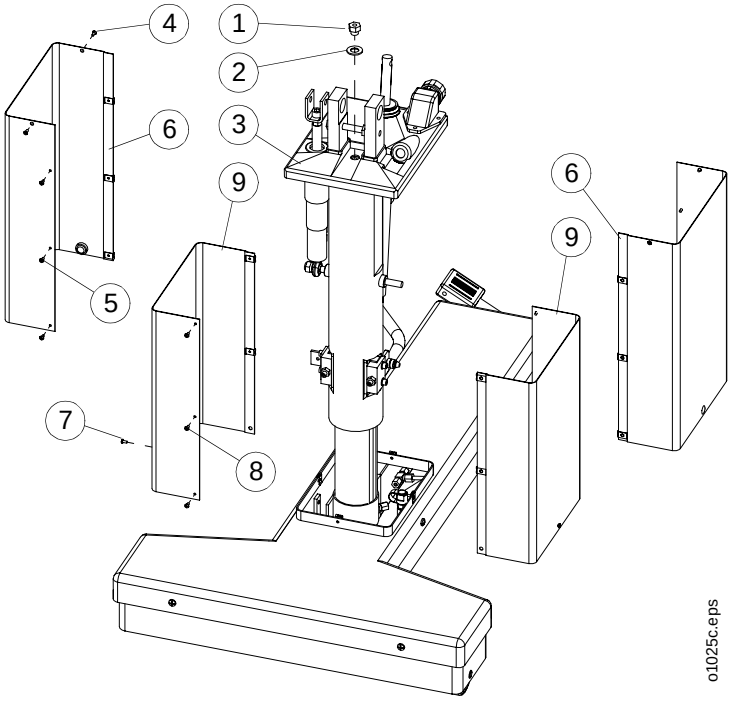
5.3.1 Removal of base casing



- Loosen screws (1).
- Lift up the column’s telescopic casings (2) and hang them from the mattress base.
- Loosen the screws (3) and lift the casing (4) from its corner.
- Turn the casing into the suitable position and hang from the mattress base or support on the base.

5.3.2 Removal of column casings

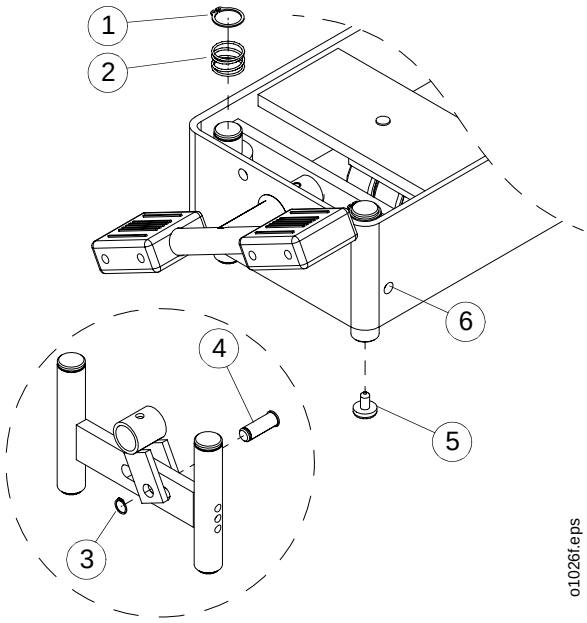
- Remove screw (1) and washer (2).
- Lift up the protective hood (3) and remove screws (4) (4 pcs) from the top of the casing.
- Remove the screws (5) (6 pcs) from the upper casing and remove the casing halves (6)
- First remove screws (7) (4 pcs) and then screws (8) (4 pcs).
- Remove casing halves (9).



5.4 Brake and column clearance

5.4.1 Removal of brake pins and plugs

- Remove the retaining ring (1) and spring (2) from both sides.
- Remove the retaining ring (3) and interlock pin (4).
- Pull out brake pins.
- Brake pin plugs (5) can be removed with, for example, a flat head screwdriver.



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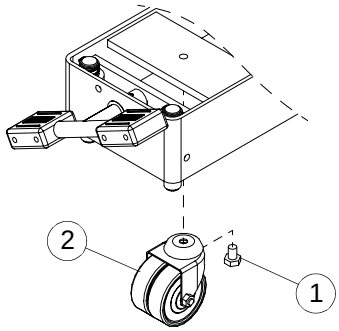
5.4.1.1 Brake adjustment

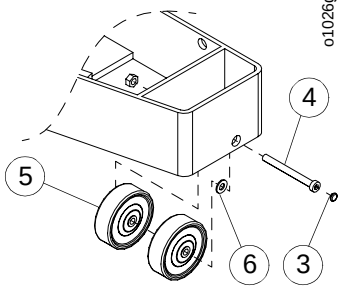
Turn the adjuster screws (6) until there is no clearance in brake pins and they move easily up and down.

5.4.2 Castors

Removal of front castor

- Remove screw (1) and take the front castor (2) off.





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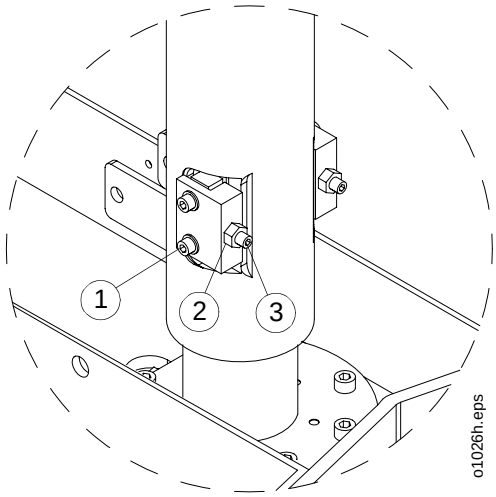
Removal of rear castor

- Remove plug (3) and loosen screw (4).
- Remove rear castors (5) and washer (6).

5.4.3 Adjustment of column clearance



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- First, raise the table at least 20 cm from its lowest position.
- Remove column casing as shown in in section 5.3.2.
- Loosen retaining screws (1) (2 pcs) on both sides of the column.
- Loosen with the locking nuts (2), one on each side of the column.
- Adjust the column until it moves without clearance using adjuster screws (3).
- Move the column up and down while checking the clearance.
- Lock the adjuster screws (3) with locking nuts (2) and ensure that the adjuster screws do not move out of position while locking.
- Tighten retaining screws (1).

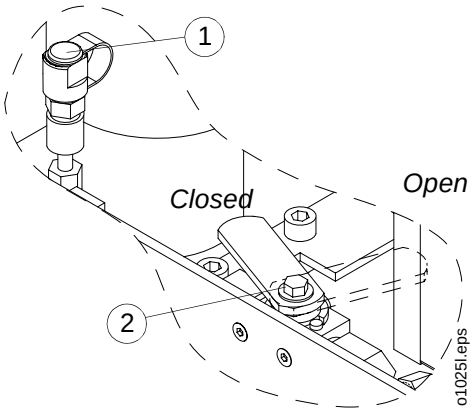
5.5 Hydraulics

5.5.1 Hydraulic pressures

Prior to removing hydraulic parts. Ensure that the mattress base and
column cylinders are in their lowest positions and the accumulator pressure has been released.

5.5.1.1 Pressure release

- Set the side tilt adjustment from the selector valve.
- Remove the pressure gauge connector cover (1) and connect the pressure gauge.
- Open the ball valve (2) and lift the pedal
  until the gauge reads 0 bar.



5.5.1.2 Checking pressure

- Put the table top into its horizontal position.
- Remove the pressure gauge connector cover (1)
  and connect the pressure gauge.
- The pressure in the accumulator should be 60 bar.

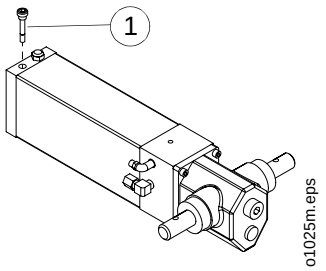
5.5.1.3 Pressure adjustment

- Move the selector into side tilt position and pump the table top into its outermost position.
- Remove the pressure gauge connector cover (1) and connect the pressure gauge.
- Open the ball valve (2) and pump the pedal until the gauge reads 63 bar.
- If required, the pressure can be reduced by lifting the pedal.
- Check the pressure as shown in in section 5.5.1.2.

5.5.2 Gauging oil level

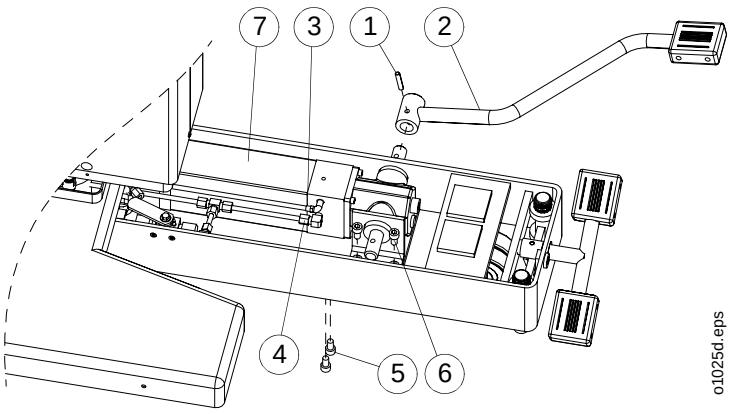
- Open oil tank cap (1).
- Wipe off dipstick and screw back into place.
- Open and check oil level.

The oil level should come to the dipstick ring.
The oil recommended for use is Shell Tellus 32 or similar.



5.5.3 Removal of hydraulic pump

- Lift the protective casing to the side.
  Casing removal
  in section 5.3.1 on page 12.
- Remove the roll pin (1) and pedal (2).
- Disconnect connectors (3) and (4).
- Loosen screws (5) and (6).
- Remove pump (7).



5.5.3.1 De-airing hydraulic pump

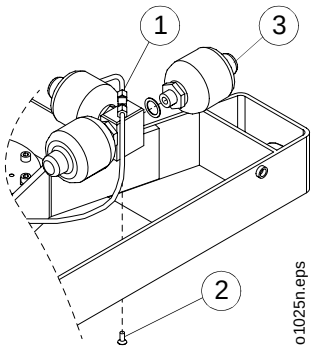
Air may enter the hydraulic system when tilting the table during maintenance.

Air in the system will cause the following problems:

- the mattress base will not rise when pumping or part of the pedal pump action is ‘empty’.
- When lowering, the table shakes or the movement is jerky.

The air is de-air from the system when the table is pumped into its upper position, and then pumped an additional 10 - 20 times. Lower the table and check movements.

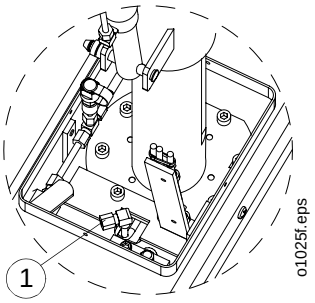
5.5.4 Removal of pressure accumulators

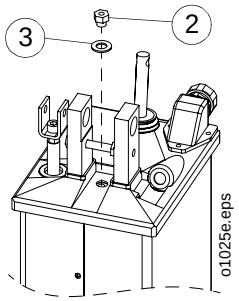


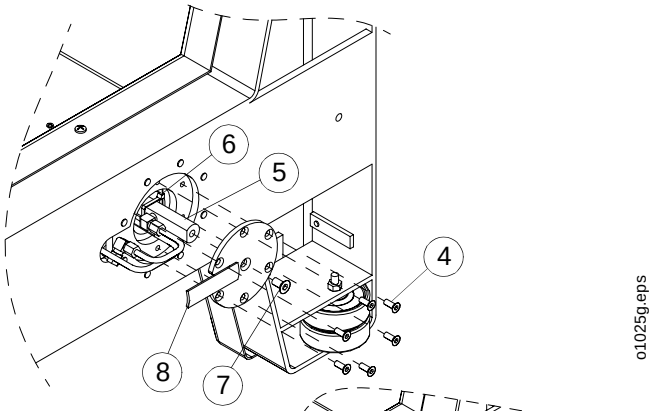
- Lift the protective casing to the side. Casing removal in section 5.3.1 on page 12.
- Pressure release in section 5.5.1.1 on page 14.
- Disconnect hydraulic lines (1).
- Loosen screw (2).
- Open pressure tank (3).

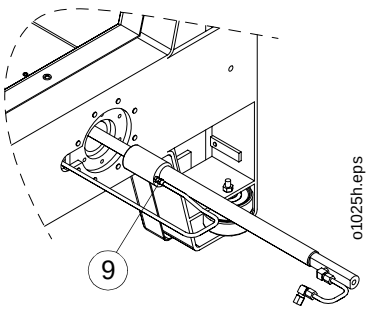
5.6 Cylinder replacement

5.6.1 Removal of height adjuster cylinder





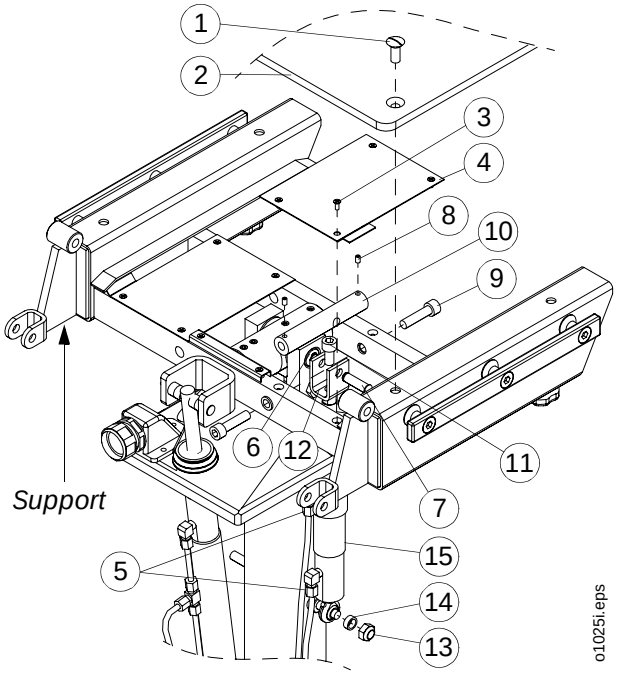




- Remove column casing as shown in section 5.3.2.
- Disconnect the connector (1).
- Lay the operating table on its side.
- Loosen nut (2) and remove washer (3)
- Loosen screws (4) and pull cylinder (5) out approximately 50 mm.
- Break the truss binding (6).
- Loosen screw (7) and remove protective collar (8).
- Pull cylinder out until the line connector (9) comes into view and open connector.
- Pull cylinder out.

NOTE! When pulling the cylinder out, ensure that the blue line does not kink, as this will damage it.

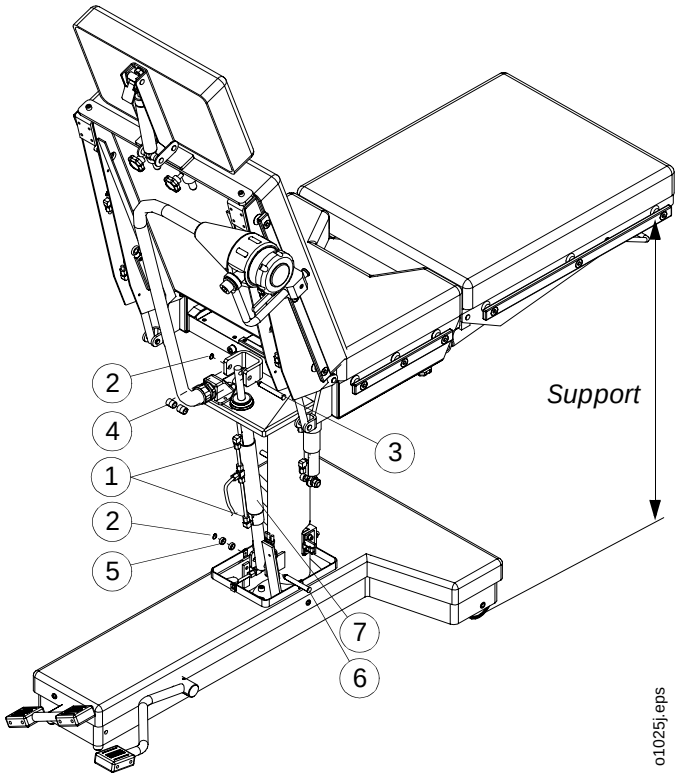
5.6.2 Removal of side tilt cylinder from column



- Remove column casing as shown in section 5.3.2.
- Pressure release in section 5.5.1.1 on page 14.0
- Support the operating table so it will not fall over.
- Remove screws (1) and seat base plate (2).
- Remove screws (3) and guard plate (4).
- Disconnect hydraulic lines (5).
- Remove the retaining ring (6) and pin (7).
- Loosen retaining screws (8) and remove screws (9) and axle (10).
- Loosen screw (11) and remove mounting bracket (12).
- Remove the nut (13) and bushing (14) from the lower end of the cylinder.
- Pull cylinder (15) down through its protective hood.

NOTE! When mounting the lower end of the cylinder, remember to leave 0.5 mm clearance for the bushing.

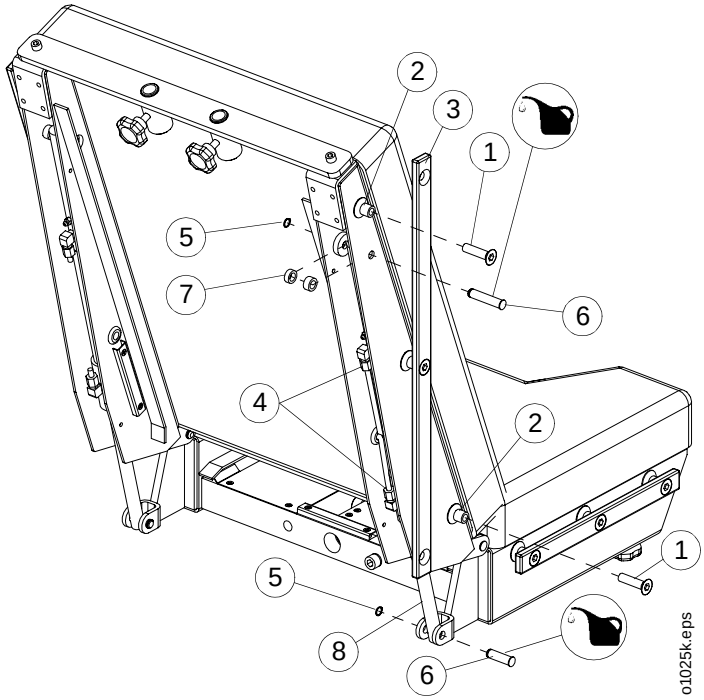
5.6.3 Removal of Trendelenburg cylinder from column



- Remove column casing as shown in section 5.3.2.
- Pressure release in section 5.5.1.1 on page 14.
- Support the leg section of the mattress base so that it will not fall.
- Disconnect hydraulic lines (1).
- Remove the retaining rings (2) and pin (3) and bushings (4).
- Remove bushings (5) and pins (6).
- Pull cylinder (7) down through its protective hood.

5.6.4 Replacement of back section gas spring

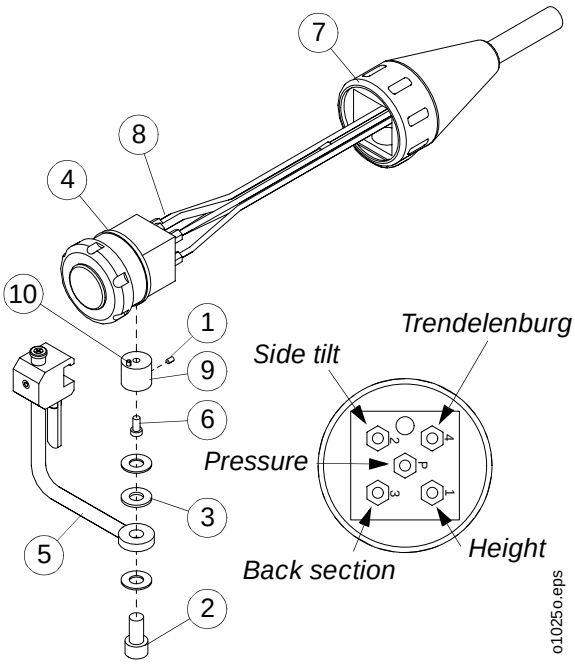
- Pressure release
  in section 5.5.1.1 on page 14.
- Remove screws (1).
- Remove bushings (2).
- Turn out the accessory rail (3).
- Disconnect hydraulic lines (4).
- Remove retaining rings (5).
- Remove pins (6) and bushings (7).
- Remove cylinder (8).



5.7 Selector

- Pressure release in section 5.5.1.1 on page 14.
- Loosen retaining screw (1).
- Remove screw (2) and washers (3).
- Lift selector valve (4) out of mounting rod (5) and loosen screw (6).
- Pull the selector valve out of its housing (7).
- Disconnect hydraulic lines (8).

When re-installing, turn the bushing (9) so that its spring lock pin (10) is in line with the hole on the selector valve.

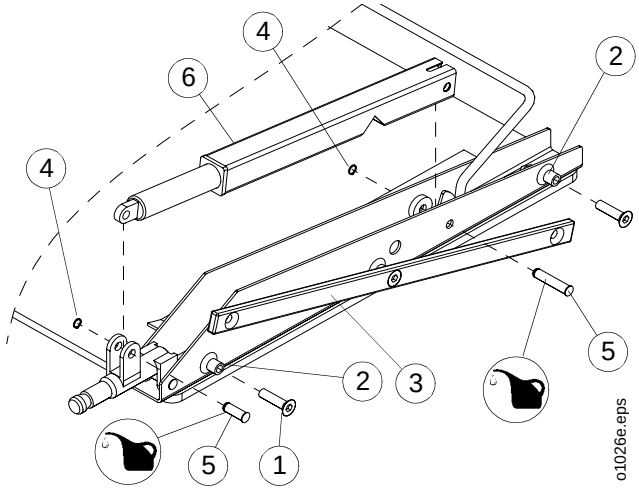


5.8 Replacement of gas springs

5.8.1 Replacement of leg section gas spring

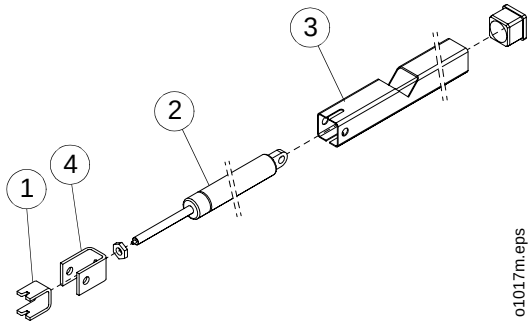
Remove leg section from the operating table and turn it upside down.

- Remove screws (1).
- Remove bushings (2).
- Turn out the accessory rail (3).
- Remove retaining rings (4).
- Remove pins (5).
- Remove gas spring (6).



5.8.1.1 Removal of gas spring from protective sleeve

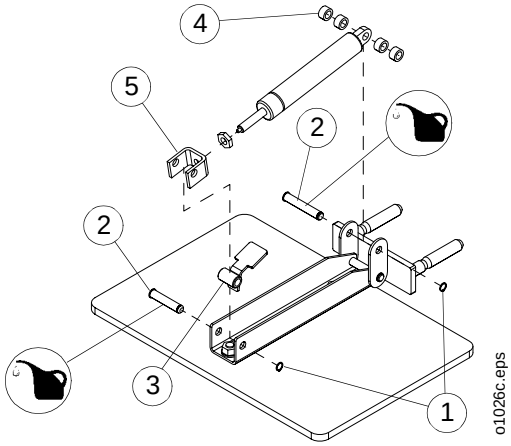
- Remove gas spring ram mount (1).
- Pull gas spring (2) out of protective sleeve (3).
- Unscrew mounting bracket (4). Count the rotations for remounting.



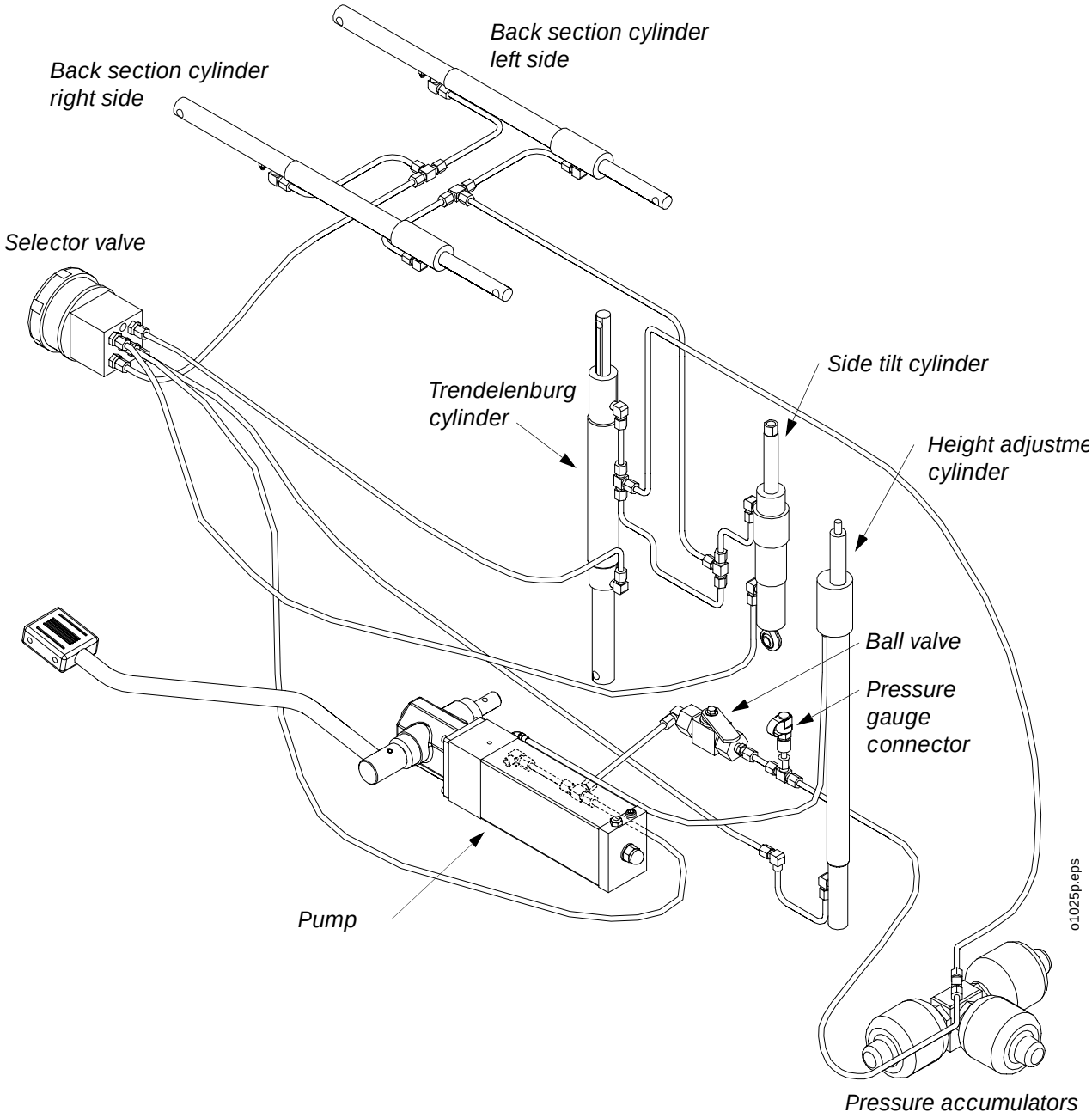
5.8.2 Replacement of headrest gas spring

Remove leg section from the operating table and turn it upside down.

- Remove retaining rings (1).
- Remove pins (2).
- Remove release lever (3) and bushings (4).
- Unscrew mounting bracket (5). Count the rotations for remounting.



5.9 Connection of hydraulics

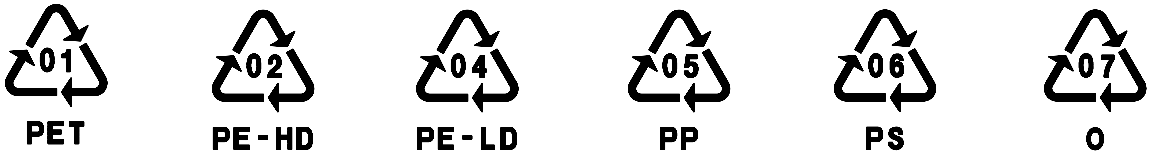


6. RECYCLING

6.1 Metals and plastics

When disposing of an operating table or replacing any of its parts, check the recyclability of each item. A majority of the metal used on the operating table is steel. The operating table also contains a number of zinc castings and brass bushings. When recycling plastic parts, determine the material type. The table on page 6 lists part materials, which will provide assistance in determining the correct recycling procedure. If a part material is missing from the table, contact your sales representative. For more information on recycling, contact your local waste management facility or visit related sites on the Internet.

Below are recycling symbols, which are marked on parts made of plastic. Products marked with these symbols can be used as energy waste.



6.1.1 Gas springs

Gas springs can be disposed of as metal waste after all nitrogen gas and oil has been removed from them.

WARNING! Releasing nitrogen gas is strictly prohibited, without following the proper instructions. Your sales representative will provide the necessary instructions for the correct disposal of gas springs.

6.1.2 Hydraulics

Hydraulic cylinders can be disposed of as metal waste after all oil has been removed from them.

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